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NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

MBA PROFESSIONAL REPORT

TIME ON STATION REQUIREMENTS: COSTS, POLICY CHANGE, AND PERCEPTIONS

December 2016

By: **Gregory A. Grayson**
Jose N. Mireles

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**TIME ON STATION REQUIREMENTS: COSTS, POLICY CHANGE, AND
PERCEPTIONS**

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Submitted in partial fulfillment of the requirements for the degree of

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from the

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TIME ON STATION REQUIREMENTS: COSTS, POLICY CHANGE, AND PERCEPTIONS

ABSTRACT

The Department of Defense (DOD) continuously seeks ways to cut costs, and Congress has directed the DOD to reduce permanent change of station (PCS) expenses. One option that may reduce expenses and improve quality of life without sacrificing readiness is to increase time on station (TOS). Accordingly, this project evaluates how Marines feel about the current TOS policy as well as how they would feel if the requirements increased from three to five years. We developed and fielded a survey to capture attitudes about TOS requirements and econometric tools analyzed responses. Our findings show that while 80% reported the current TOS policy adequately supports career development, 67% think longer TOS will improve quality of life and 85% think longer TOS will not sacrifice unit readiness. Moreover, the Marine Corps stands to save \$38M annually by increasing its rotation cycle from three to five years. We take these results as evidence that Marines support longer TOS and a change in policy might be beneficial to the institution.

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LIST OF ACRONYMS AND ABBREVIATIONS

ACV	Amphibious Combat Vehicle
AIP	Assignment Incentive Pay
CBA	Cost Benefit Analysis
CMC	Commandant of the Marine Corps
COA	course of action
CONUS	Continental United States
CR	Continuing Resolution
DLA	Dislocation Allowance
DOD	Department of Defense
DODI	Department of Defense Instruction
DON	Department of the Navy's
EFV	Expeditionary Fighting Vehicle
FY	Fiscal Year
GAO	Government Accountability Office
HASC	House Armed Services Committee
HHG	House Hold Goods
LCM	low-cost move
M&RA	Manpower and Reserve Affairs
MCO	Marine Corps Order
MOS	Military Occupational Specialty
MPC	Marine Personnel Carrier
MyCAA	My Career Advancement Account
NDAA	National Defense Authorization Act
NPS	Naval Postgraduate
OCONUS	outside the Continental United States
OSD	Office of the Secretary Defense
PCA	Permanent Change of Assignment
PCS	Permanent Change of Station
PDS	Permanent Duty Station
SME	subject matter expert
TOS	time on station
USMC	United States Marine Corps

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I. INTRODUCTION

During a time of fiscal uncertainty, the Department of Defense (DOD) must find ways to operate within a constrained budget. One proposal directed by Congress was to evaluate the department's permanent change of station (PCS) program and determine potential savings from program revisions. Specific areas Congress sought to understand were 1) current spending on PCS moves; 2) previous changes to PCS policy and associated savings; 3) the extent to which services meet rotational goals; and 4) the impacts that lengthened tour rotations could have on unit readiness, stability for service members and families, and cost savings (SASC, 2014). As will be discussed in Chapter II, many studies have been conducted in these areas; however, none have resulted in policy changes or decisions. Cost savings in terms of budgetary outlays are inevitable when the number of annual PCS moves decrease. However, understanding the perceptions and attitudes of Marines to lengthening tours can provide decision makers with valuable perspective to potential benefits as well as unintended consequences to retention, morale, unit cohesion, and ultimately readiness to complete a given mission. This project specifically evaluates how Marines feel about the current TOS policy as well as how they would feel if the requirements increased from three to five years.

A. BACKGROUND

Debates over national priorities, coupled with a growing national deficit, tend to target discretionary spending to absorb budget cuts. Discretionary spending is the portion of president's budget that requires annual approval from Congress and is provided in the form of appropriations. As federal agencies seek ways to reduce spending levels and operate within constrained budgets, none are more targeted for reduction than the DOD's since its budget accounts for more than half of all discretionary spending. As commander-in-chief, the president of the United States assists the DOD in reducing spending by implementing mandatory budgets cuts. These spending cuts require leadership to make difficult choices on how to prioritize competing interests within DOD.

For example, in the Marine Corps, constrained fiscal resources have come at a cost of readiness, equipment, and maintenance. Faced with full sequestration in the FY 2014 budget, General Amos (then Commandant of the Marine Corps [CMC]) had to make the difficult choice to maintain operational training and readiness by cutting important programs like the Marine Personnel Carrier (MPC). General Amos said “the MPC is off the table. It’s not a function of it wasn’t a good idea or there wasn’t a need—but you can’t have everything you want.” (Freedberg, 2013). That year, General Amos was prepared to decrease aircraft, cut MPC, and reduce personnel in order to save critical programs like the Amphibious Combat Vehicle (ACV), which replaced the Expeditionary Fighting Vehicle (EFV) program canceled just two years earlier due to fiscal constraints.

Most recently in his testimony to the House Armed Services Committee (HASC) in March 2016 on FY2017’s budget, General Robert Neller, current CMC, stated that “The fiscal reductions and instability of the past few years have impacted our readiness” (Neller, 2016). He further notes that fiscal constraints require prioritization in readiness to ensure deployed and next-to-deploy units receive head-of-the-line privileges in readiness resources, while “non-deployed commands lack sufficient resources to meet the necessary personnel, training, and equipment readiness levels in order to respond today.” General Neller concluded, “the Marine Corps is no longer in a position to generate current readiness and reset our equipment, while sustaining our facilities, and modernization to ensure future readiness” (2016).

These exerts highlight the key issue for the Marine Corps, which is how to sustain the nation’s “Force in Readiness” within a constrained fiscal environment. In order to accomplish this, Marine leadership will continue to argue the merits of certain programs like the Joint Strike Fighter and ACV. However, they also recognize that budgets may continue to shrink or remain constant at the very least. The result is identifying new areas to gain efficiencies in spending and execution. Service PCS programs is one such area. Accordingly, in the FY15 National Defense Authorization Act (NDAA), Congress directed the GAO to evaluate its PCS program and the potential cost savings it could provide.

B. UNDERSTANDING THE PCS PROGRAM

A PCS move is when a service member is reassignment from one Permanent Duty Station (PDS) to another. The DOD provides instructions and guidance regarding military assignments in DOD Instruction (DODI) 1315.18. The purpose of the instruction is to provide the services with policies and procedure needed to establish service specific assignment programs that ensure, among other things, “an equitable assignment system...professional development...stability in tour completions...tour lengths consistent with...combat capability and readiness, and PCS stability” (2015). Per this instruction,

TOS requirements are established to enhance operational readiness by stabilizing members in CONUS units, reduce PCS costs, and improve quality of life by reducing personal and family turbulence. When all other factors are equal, TOS will be a primary consideration in selecting Service members for reassignment. (DOD Instruction [DODI] 1315.18, 2015)

Since most service members are required to maintain current qualifications for promotion and career progression, TOS often becomes the primary consideration for reassignment. For assignments within or from the Continental United States (CONUS) the minimum TOS is 36 months. This means that a service member must meet this minimum prior to executing a PCS move to another PDS. However, the instruction provides numerous exceptions to policy, ranging from a reassignment to an overseas sea tour to a reassignment under the Exceptional Family Member Program. The DODI acknowledges there is no specific format required for establishing procedures for monitoring and measuring the PCS program. Instead, the instruction recognizes the uniqueness of each service and delegates this responsibility to the Service Secretaries. The result is each service executes PCS assignments according to their mission.

Marine Corps Order (MCO) P1300.8S governs the military assignment process for the Marine Corps. This order is essentially a derivative of the DODI 1315.18, and acknowledges all instructions previously discussed. The purpose of the order is stated in commander’s intent and reads as follows:

The Marine Corps will limit the number of Permanent Change of Station (PCS) moves to those required to achieve/maintain combat readiness or to ensure equitable treatment and career development of individual Marines.

This policy further improves combat readiness by controlling personnel turnover, increasing the stability of Marine families, and reducing PCS costs. (Marine Corps Order [MCO] P1300.8S, 2014)

In terms of cost, the MCO directs that “each PCS transfer be met with the least amount of funds and that low-cost moves (LCM) and no-cost Permanent Change of Assignment (PCA) orders be issued whenever possible” (2014). An LCM is a PCS move typically within 50 miles of a current duty station. Per DODI 1315.18, the cost of an LCM is typically not more than \$1,000. A PCA is a reassignment to a new command that is typically within the same installation. Although this portion of the policy meets the commander’s intent in reducing PCS cost, this action can effect career progression and promotion.

Since this project specifically evaluates the effects of lengthening the TOS requirements (in an effort to reduce costs), it is important to understand how to implement the TOS requirements prescribed by the DODI. MCO P1300.8S states that “TOS requirements are meant to stabilize Marines and their families and reduce PCS costs.” Further it says “There is no maximum tour length prescribed for CONUS tour lengths” and “The minimum TOS requirement for CONUS is 36 months” (2014). This means that in order to stabilize movements of families, maintain combat readiness and effectiveness, and to reduce cost, a Marine should not PCS until they have served 36 months within their current assignment. The Marine Corps’ PCS program does not prescribe a maximum tour length. However, as previous stated, remaining at a duty station beyond 36 months can be perceived to have negative effects to a Marine’s career.

C. UNDERSTANDING PCS COSTS

The cost of a PCS move largely depends on the type of move being executed. Each year the Marine Corps must budget for various PCS types. Actual costs are explored in later chapters. The purpose here is to identify the PCS types. It is important to note that this research focuses on Operational and Rotational Travel only. Accession and Training PCS moves are not analyzed because both are required to maintain statutory manning levels and are not amenable to a policy change. Likewise, Separations PCS is not analyzed because it is not responsive to a TOS policy change. Finally, Unit PCS

occurs so infrequently that analysis in this category is irrelevant. Table 1 includes a list of PCS types.

Table 1. PCS categories. Adapted from DOD (2016).

PCS Category	Definition/Explanation
Accession Travel	Officers & Enlisted who are called/recalled from home of record or recruiting station to their duty station or training.
Training Travel	Officer & Enlisted within the continental U.S. (CONUS) who move to a formal military or civilian school to attend a period of instruction of 20 weeks or more in duration.
Operational Travel	Officer & Enlisted who travel from one duty station within the CONUS to another duty station within the continental U.S.
Rotational Travel	Officer & Enlisted who travel from one duty station within the CONUS to another duty station outside the continental U.S. (OCONUS) (i.e., overseas).
Separation Travel	Officer & Enlisted who are separating from service and moving from last duty station to their home of record or point of entry.
Unit Travel	Officer & Enlisted who travel from one duty station within the CONUS to another duty station within the continental U.S. when the move is in connection with the relocation of organized unit.

Each of the categories listed Table 1 are part of the Marine Corps Budget Activity for PCS and include a variety of allowances and entitlements. The amount of each allowance and entitlement is based on particular demographics and PCS circumstances unique to each service member (e.g., rank, marital status, number of dependents, next PDS location). Table 2 outlines types of PCS travel allowances.

Table 2. PCS cost types and definitions. Adapted from Defense Travel Management Office (2016).

Type of Allowance	Definition/Explanation
Per Diem for PCS Travel	The service member receives the CONUS flat rate of \$140/day for travel expenses associated with a PCS move (e.g., meals, lodging and incidental expenses). Each dependent 12 yo or older receives 75% of the member rate/day. Each dependent under 12 yo receives 50%.
Travel by Privately Owned Conveyance	Authorized expense for wear & tear and fuel expense of using your personal vehicle to travel to new duty station. \$.19/mile
Household Goods (HHG)	Weight allowances by rank depend on the cost.
Non-Temp Storage	Storage of HHG/personnel effects at government expense in a non-temporary storage facility. Must be authorized in orders and is included in weight restrictions of HHG.
Temporary Lodging Expense	Lodging expense for up to 10 days in connection with PCS move within CONUS at new or old duty station. Not to exceed (NTE) \$290/day/family. Apply the following multiples by the local rate. Service member: 65%; Service member & 1 dependent 100%; each additional dependent over 12 yo add 35%; under 12 yo add 25%. Note: additional instructions apply for members traveling OCONUS.
Dislocation Allowance (DLA)	Authorized to partial reimburse a service member for the expenses incurred in relocating the member's household during a PCS move. Rate paid at with or without dependent rates. Rates vary depending on rank and number of dependents. For example, the rate for a Staff Sergeant (E-6) with and without dependent is, \$2,350.00 and \$1,600.00 respectively. A Major's rate would be \$3,500 and 3,042.00, respectively.

The allowances in Table 2 are a general list and does not include all types of cost associated with a PCS move. A military move is expensive. A PCS claim includes personal entitlements listed in Table 2 paid directly to the member and his/her dependents. For example, a Marine family with three dependents will be reimbursed approximately \$5,000 when they transfer from the east coast to the west coast. This amount is from one of the author's personal experience in the military. There is also the less visible, but no less significant, monetary cost the government incurs to move a member's household goods (HHG). A HHG expense is determined by a weight-to-rank ratio and transit length. One recent example is it cost the government \$6,000 to move a Marine Major and his family's 9,000 pounds of HHG (~75% of the weight-to-rank allowance) from San Diego, CA to Monterey, CA. It is also worth noting that this is a

much shorter distance by comparison to more frequent and expensive coast-to-coast or overseas moves. There are a variety of factors that can impact the cost of an individual move; however, the point is to illustrate that PCS cost is extremely cumbersome to calculate because no two moves are identical.

D. SUMMARY

This project evaluates how Marines feel about the current TOS policy as well as how they would feel if the requirements increased from three to five years. We developed and fielded a survey to capture attitudes about TOS requirements and econometric tools analyzed responses. Our findings show that while 80% reported the current TOS policy adequately supports career development, 67% think longer TOS will improve quality of life and 85% think longer TOS will not sacrifice unit readiness. Moreover, the Marine Corps stands to save \$38M annually by increasing its rotation cycle from three to five years.

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II. LITERATURE REVIEW

This research paper drew from a comprehensive body of literature that analyzes PCS cost and the effects TOS has on military service members and their families. The existing research ranges from research projects conducted by former Naval Postgraduate (NPS) students to academic references to comprehensive studies performed by the RAND Corporation and GAO. The following format is used to help guide the reader's understanding of the literature reviewed: purpose, Scope and Methodology, conclusion and relevance. The first three categories summarize the literature, while relevance connects it to our research project. We reviewed the following works:

A. *GAO MILITARY COMPENSATION: DOD NEEDS COMPLETE DATA TO ASSESS PERSONNEL RELOCATION COSTS (GAO-15-713)*

Purpose: This 2015 report was the result of a Congressionally directed study into the DOD's PCS program. The report 1) assesses the per-move-cost and how it changed over time, 2) assesses whether personnel were meeting TOS obligations, and 3) addresses the Office of the Secretary of Defense's (OSD) study regarding the merits of increasing TOS requirements. The OSD's study was performed by the RAND Corporation, which is discussed in the next section (Ferrell, 2015).

Scope and Methodology: This report evaluates the PCS cost throughout DOD and the factors that influence change over time. These factors include relevant laws, changes to DOD or service-specific PCS policies, and other economic factors. The period of the evaluation is between fiscal years 2001 and 2014. Summary cost data is evaluated for the six PCS types listed in Table 1 by analyzing each service's budget materials. The study looks at both CONUS and OCONUS moves. Additionally, the study evaluates the median and average TOS for each service to evaluate whether service members were meeting TOS obligations. The study also reviews waivers and exceptions to policy (Ferrell, 2015).

Conclusion: There was not enough reliable or complete information to determine whether a PCS policy change to extend TOS requirements would have positive or

negative effects. First, the cost data was neither consistent nor complete and should not be used by decisions makers. Second, DOD PCS programs are not only void of continuous process analysis and improvement, but they also could not identify and evaluate changes that may be driving PCS costs. Third, DOD could not provide complete and consistent data on waivers and exceptions. Last, although DOD planned to evaluate the potential benefits of extending the TOS requirement, without complete and consistent data, it was unable to evaluate whether implementing planned actions was effective (Farrell, 2015).

Relevance: This report highlights the importance of evaluating PCS program and TOS requirements toward reducing costs. This study uses metrics that our research leverages in evaluating its data. For example, in determining the per-move cost, GAO divides total PCS cost of each PCS type by the number of service members moved. This method proved reliable in evaluating the cost per move and is reliable in our study. (Farrell, 2015).

B. RAND CORPORATION: *TOUR LENGTHS, PCS, AND SAVINGS AND IMPROVED STABILITY (RR-1034)*

Purpose: Bond, Guo, Lewis, Leonard and Roster (2016) conducted this study to support OSD's requirement to report to Congress on the potential impacts and savings of extending TOS requirements. OSD's report to Congress includes 1) cost savings associated with increased tour lengths, 2) impacts increased TOS would have on families, quality of life, and job performance 3) the impacts to professional development and promotional opportunities, and 4) the impacts on service members and their families serving in hardship locations (Bond et al., 2016).

Scope and Methodology: The scope of this study by Bond et al. (2016) is DOD-wide. Its primary focus is on Operational and Rotational PCS types because these types were considered more susceptible to policy changes. Although the study evaluates impacts and savings, it primarily concentrates on options for encouraging tour extensions. The study identifies four possible courses of action (COA) that could reduce the number of moves in the two aforementioned PCS types: 1) establish longer tour lengths, 2)

restrict circumstances for curtailments (i.e., exceptions and waivers to TOS), 3) simply encourage service members to extend, and 4) encourage service members to accept consecutive tours in the same location. A survey was developed to gauge a service member's willingness to extend and what factors influenced their decision (though greater emphasis was given to those serving in overseas tours).

A multivariate statistical model was then used to determine the number of service members that would be willing to extend for a financial incentive. The model uses a percentage of their base pay as the financial incentive. The study also reviews existing programs used to increase TOS (i.e. Assignment Incentive Pay [AIP] that is governed for all services by DOD Financial Management Regulation Volume 7A). This study also explores alternative incentive programs like an auction (Bond et al., 2016).

Conclusion: Bond et al. (2016) concluded longer tours would ultimately reduce the number of personnel moving each year and thus result in cost reduction. However, the effect of a mandatory extension policy is unclear. On one hand, longer tours could result in unit and family stability as well as allow the service member to better develop as a subject matter expert (SME). On the other hand, longer assignments could reduce morale if stationed at an undesirable location or hinder career development if training opportunities were limited due to the nature of that assignment. Nonetheless, the study found 60% of members serving overseas were not willing to extend. Also, although the study's statistical models indicate there was negative perception to increasing TOS (particularly in overseas tours) there was a substantial number of personnel that would be willing to extend if an attractive incentive package was offered.

Further, the study concludes that programs, like AIPs, have several problems. First, they are structured as a “take-it-or-leave-it” programs and do not properly incentivize members because they do not account for individual preferences. Consequently, this can result in overpayments since it does not account for those that would have been willing to extend for less. Conversely, an auction enables service members to determine what they believe is the correct dollar incentive to commit to an extension. Auction-based programs may also mitigate overpayments to service members because only the lowest bids are considered and accepted (Bond et al., 2016).

Relevance: This RAND study provides a benchmark to use when evaluating the perceptions obtained from our Marine Corps sample population (a complete description of our sample population is found in Chapter III). For example, this survey concludes that a policy change that increases TOS could have negative impacts to morale and job performance. The survey also concludes that personal and family relationships have perceived negative impacts. Lastly, the study shows service members could be more willing to extend, even at an undesirable location, if given a financial incentive. We plan to design and conduct a similar survey to evaluate perceptions Marines have on the current TOS policy (Bond et al., 2016).

**C. RAND CORPORATION: *ADVANCING MILITARY SPOUSE CAREERS*
(RR-784)**

Purpose: The primary goal of Friedman, Miller and Evans (2015) study was to evaluate the revised My Career Advancement Account (MyCAA) scholarship program, which was instituted in 2010. MyCAA assists eligible spouses in pursuing degrees, certificates, or licenses. The study specifically sought to understand educational and employment preferences of military spouses, as well as identify barriers that prevented spouses from using MyCAA and reaching their educational or employment goals (Friedman et al., 2015).

Scope and Methodology: Friedman et al. (2015) focuses on the revised population of eligible spouses, which include the junior career ranks (i.e., E-1 to E-5, W-1 to W-2, and O-1 to O-2). An additional restriction to eligibility is that spouses could not be serving in the military. Data to analyze preference was gathered using a survey developed by Defense Manpower Data Center and the Office of the Deputy Assistant Secretary of Defense for Military Communities and Family Policy. The survey is titled “DOD’s 2012 Active Duty Spouses Survey” and was sent via email and direct mail to more than 700,000 active-duty spouses in 2012; however, only 4,454 responses were analyzed using key demographic data found in personnel records (Friedman et al., 2015).

Conclusion: Friedman et al. (2015) conclude MyCAA provides tuition of up to \$4,000 (\$2,000 limit per fiscal year). The study reveals that 82% of eligible spouses listed

“cost” as the key factor that prevented them from pursuing higher education, while only 25% cited frequent moves as a reason for not seeking educational opportunities. In the area of employment, child care was the primary reason for not seeking employment for those who wanted to work. Another 62% cited they wanted to “stay home to care for children” or said that “child care was too costly,” while only 23% of those wanting to work cited PCS as the reason for not working (Friedman et al., 2015).

The study also showed that PCS greatly disrupts the ability to find employment after a move primarily because there were few opportunities available for their area of work or it took considerable time to acquire a new credential after a military move. Table 3 shows nearly 60% of spouses experiencing a PCS move took longer than 4 months to find employment. Table 4 shows 72% required new credentials to be employment eligible in their field. Moreover, it took nearly half of those spouses longer than 4 months to acquire the credential (Friedman et al., 2015).

Table 3. Time it took spouses to find employment after last PCS move.
Adapted from Friedman, Miller, and Evans (2015).

Duration	All Rank-Eligible Spouses (%)
< 1 month	13
1 Month to < 4 months	28
4 months < 7 months	22
7 months < 10 months	9
> 10 months	28

Table 4. Percentage requiring new certification and time it took to obtain.
Adapted from Friedman, Miller, and Evans (2015).

Required	All Rank-Eligible Spouses (%)
YES	72
NO	28
Duration	All Rank-Eligible Spouses (%)
< 1 month	14
1 month to < 4 Months	37
4 months to < 7 months	21
7 months < 10 months	7
> 10 months	20

Relevance: This study helps understand how PCS creates a barrier to education and employment opportunities for military spouses. A PCS move is one of the top reasons for not seeking higher education and employment opportunities. Although PCS was ranked only 8 out of the top 16 reasons cited for not working, frequent moves are not irrelevant. As Tables 3 and 4 indicate, a PCS move can cause disruption in employment/career continuity as well as employment certifications. While our research does not directly seek responses from military spouses, we are concerned with the perception that service members have regarding their spouse's ability to seek higher education and maintain gainful employment. We are also concerned with how PCS frequency impacts the decision to make the Marine Corps a career (Friedman et al., 2015).

D. RAND CORPORATION: *CHALLENGES TO MILITARY SPOUSE EMPLOYMENT AND EDUCATION (RR-MG-196)*

Purpose: Like the previous research, Harrell, Lim, Castaneda and Golinelli (2004) evaluate the employment and educational opportunities of military spouses. This study seeks to answer whether employment issues were a function of demographics or other factors, such as frequent moves. Specifically, the study 1) provides a better illustration of military spouse employment; 2) explores employment issues for military spouses; and 3) identifies policies that could mitigate these issues and retain qualified personnel (Harrell et al., 2004).

Scope and Methodology: Harrell et al.'s (2004) report is a DOD-wide study that was based on quantitative and qualitative data obtained by interviewing more than 1,100 military spouses. This info was used to gain an understanding of the personal perceptions and experiences of military spouses. The data used to identify demographic information (e.g., age, ethnicity, education) was obtained using the 1990 U.S. Census. This data was then compared with the 1999 Military Spouses Survey and the 1999 Current Population Survey to understand variations over time. The interviews were conducted either in-person or over the phone. The interview used both closed and open-ended questions to gain a greater understanding of the perceptions of military spouses. Service member ranks ranged from E-1 to E-9 and O-1 to O-6. Also, the study focused primarily on wives' responses since the number of male spouses were so few. Finally, the study provides a comparative analysis between military spouses and employment information of civilian spouses of the same demographic (Harrell et al., 2004).

Conclusion: Harrell et al. (2004) concluded the majority (67%) of military spouses believe military lifestyle negatively affects their employment opportunities, with 33% citing frequent moves as the primary cause. While this is in contrast to the MyCAA study, it is important to highlight that the MyCAA study focuses on junior Marine spouses. (Harrell et al., 2004). Additionally, this study concluded frequent moves also impact educational opportunities. Military moves resulted in difficulties transferring credit from one institution to the next. More importantly, spouses delayed further education due to expensive out-of-state tuition rates. The result was to either seek residency, which caused more delay, or simply wait until the service member separated from the military. Although PCS negatively impacted employment, the study indicates there are other reasons for not being employed. For instance, labor markets in some locations were not favorable for certain educations or qualifications and/or did not provide jobs with high paying opportunities. In these and other locations, low paying jobs did not overcome the high cost of child care; thus, the opportunity cost of working did not overcome the decision to stay home (Harrell et al., 2004).

Relevance: Since our research seeks to understand the effects and perceptions to a policy change, this literature provides important backdrop to examine our survey data.

Although this study is more than a decade removed, it allows us to compare the perceptions of military spouses and juxtapose them with today's service member's opinion about how PCS moves impact their spouse's educational and employment opportunities. Also, this literature provides other areas of consideration. For instance, although longer TOS requirements could save money, it could prove to have negative effects on the military service member's decision to remain on active duty if the duty station is located in an area with poor education or employment opportunities (Harrell et al., 2004).

E. NPS THESIS: ANALYZING BENEFITS OF EXTENDING MARINE CORPS PCS TEMPO

Purpose: In his 2011 study, Morales evaluates the effects of increasing TOS requirements from 36 to 48 months. The effects can be characterized as costs, unit efficiency, individual promotions, and family stress.

Scope and Methodology: The fiscal aspect of Morales' study (2011) is Marine Corp-wide. The study summarizes the dollars spent to execute PCS orders and the total number of Marines who PCS'd during that same year. The data used was obtained from Manpower Management Office at Headquarters Marine Corps, Manpower and Reserve Affairs (M&RA). The data was collected for a 10-year period from 2001 to 2010. It is important to note that the aggregate quantities include all PCS types listed in Chapter I. The average savings was determined 1) normalizing the data for inflation; 2) calculating the average cost per move; 3) calculating the total savings per Marine in a 20 year period; and 4) calculating the average annual savings. Table 5 shows the result of these calculations (Morales, 2011).

Table 5. Potential savings. Adapted from Morales (2011).

Average Cost-Per-Move	\$4,076
Total Savings from 36 months to 48 months over a 20 year career	\$6,930
Annual Saving per Marine	\$346

To evaluate unit efficiency, inspection results were obtained from Field Supply Maintenance Analysis Office, and manning levels were obtained from Manpower Management Enlisted Affairs and M&RA, Headquarters Marine Corps. Analysis was then performed by comparing the inspection scores with the unit's personnel strength (Morales, 2011).

To evaluate the PCS program, effected areas like promotion, unit cohesion, unit effectiveness, and family stress, a survey was sent to active duty Marines from an infantry battalion, a communications battalion, a recruiting command, and academic detachments. The total number of respondents was 105, from ranks ranging from E-5 through O-5, or Sergeant through Lieutenant Colonel (Morales, 2011).

Conclusion: Morales concluded there are positive and negative effects to extending TOS (2011). Examples include substantial annual savings (\$14.6 million according to this study) to decreased spousal employment and education opportunities (Morales, 2011).

Relevance: This study analyzes much of the area we hope to evaluate. However, this study evaluates the potential cost savings using the aggregate amounts across all PCS types. In our evaluation, we remove the PCS types that arguably would not be susceptible to changes in TOS (e.g., Accessions). By removing Accession and Training PCS types, which frequently occur prior to 36 months, we seek to gain a more relevant and accurate savings prediction (Morales, 2011).

F. COST-BENEFIT ANALYSIS: CONCEPTS AND PRACTICE

Overview: Boardman's work is a comprehensive resource tool on Cost Benefit Analysis (CBA). CBA was originally used in the U.S. in the 1930s. The Flood Control

Act of 1936 required the U.S. Army Corps of Engineers to conduct CBAs for flood control and harbor deepening projects. CBA gained global recognition in the 1960s when it was promoted by the UK's Minister of Transportation. Today, CBA is used worldwide to support everything from infrastructure in developing countries to court system procedures. A CBA tries to consider all of the costs and benefits to a society as a whole. CBA can be a useful public sector decision-making tool toward maximizing limited resources. As such, many government agencies require CBA during regulatory change (Boardman, 2011).

Boardman achieves his goal of producing a reference that is conceptually sound, practically oriented, and easily accessible to both students and practitioners. The author spends a great deal of time explaining the fundamental concepts of CBA. The author also effectively integrates relevant examples and illustrations to simplify and bring additional context. The 300 page, 20-chapter text begins with an overview of each step of the CBA process before dedicating entire sections to developing each step. The work provides helpful valuation tools and techniques and concludes by analyzing the strengths and limitations of CBA (Boardman, 2011).

Relevance: This reference serves as an academic reference in the conduct of our research. While we are not completing a full CBA, our research methodology pivots off the concepts presented in Boardman's work.

G. MASTERING METRICS: *THE PATH FROM CAUSE TO EFFECT*

Overview: According to Angrist and Pischke, econometrics is the use of data to answer cause-and-effect relationships. Econometrics is the combination of data, analysis, and judgement paired with statistical inference (2015). This work presents the essential tools of econometric research and explains why econometrics is useful. The authors explain five of the most valuable econometric methods by using real world examples and important issues on the political agenda. The work specifically focuses on extending simple correlation to identifying causation. For example, does having health insurance really make one healthy? In other words, *Mastering Metrics* uses data and statistics to show the path from cause to effect (Angrist and Pischke, 2015).

Relevance: We use regression to explain our survey results of the intangible impacts to a TOS policy change.

H. COST ESTIMATION: METHODS AND TOOLS

Overview: This is a comprehensive reference on cost estimation written by two accomplished NPS professors, Gregory Mislick and Daniel Nussbaum. The topics covered include: statistical and non-statistical cost estimating relationships; inflation indices; cost improvement (learning) curves; time phasing; uncertainty and economic analysis. Regression analysis, however, is the most integral part of the course, and is applied extensively to assess relationships between dependent and independent variables. (Mislick and Nussbaum, 2015).

Relevance: Regression is a relevant tool in our analysis, too. We use regression to explain our survey results of the intangible impacts to a TOS policy change.

I. SUMMARY

This literature review provides the basis for our research. The GAO reports and RAND studies provide essential backdrop for analyzing PCS policy changes and potential benefits, while the thesis and academic resources provide the academic models as a foundation for analyzing preexisting cost data and perceptions data obtained through our survey.

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III. METHODOLOGY

The following is an overview of our methodology:

- Collect PCS expense data for previous 5 FYs from PCS program lead at Headquarters Marine Corps.
- Perform cost analysis on PCS costs using an increase TOS requirement from 3 to 5 years; focus on core PSC types (e.g. Operational and Rotational) and compare to and improve upon findings in literature review.
- Identify relevant quality of life impact categories and develop survey accordingly.
- Distribute survey to Marine units that have sufficient sample size and are representative of USMC (i.e., genders, ranks, MOSSs).
- Analyze survey results and compare to findings in literature review.
- Capture the “voice” of Marine families and tell their story using the fundamentals and academic models (e.g. Regression) learned in the NPS MBA curriculum.

Our original intent was to conduct a CBA on alternatives to the TOS status quo; however, researching the implicit costs and intangibles is the area we felt we could make the greatest contribution toward improving a Marine’s quality of life. Explicit PCS costs are important (and are addressed in this report), but also analyzing attitudes provides leadership with more comprehensive information with which to make decisions. Accordingly, we dedicate our efforts to capturing how Marines feel about the current TOS policy. Instead of developing TOS policy alternatives, we focus on a defined policy change. Our research assesses the current TOS policy and captures the attitudes and perceptions of Marines if the Marine Corps were to change TOS requirements from three to five years. We use a survey as our primary means to capture attitudes about TOS requirements. We then apply econometric and cost estimation tools to analyze the data captured in the survey. In short, our methodology captures the “voice” of Marine families and tells their story.

Our more narrow approach is not to say a CBA is not worthwhile; in fact, it is our desire that our focused research be used to support a TOS CBA. Therefore, we feel it is important for the reader to understand how our analysis relates to a CBA.

A CBA systematically catalogues impacts as benefits (pros) and costs (cons), values them in dollars, and then determines the net benefit of the proposal relative to the status quo. A CBA considers all costs and benefits to a society, including economic, accounting, and opportunity costs (Boardman, 2011). According to Boardman (2011), a CBA is “a policy assessment method that quantifies in monetary terms the value of all consequences of a policy to members of society who have standing” where “the aggregate value of a policy is measured by its net social benefits (NSB)” (p. 2). In mathematical terms, NSB equals social benefits minus social costs. The purpose of CBA is to make social decision-making more rationale. Analysts use CBA to demonstrate whether an intervention to current policy is a more efficient use of society’s limited resources. Boardman (2011) breaks the CBA process into nine basic steps:

1. Specify the set of alternative projects.
2. Identify stakeholders and decide whose benefits and costs count (who has “standing”)
3. Identify the impact categories, catalogue them, and select measurement indicators.
4. Predict the impacts quantitative over the life of the project.
5. Monetize (attach dollar values to) all impacts.
6. Discount benefits and costs to obtain present values
7. Compute the net present value of each alternative.
8. Perform sensitivity analysis.
9. Make a recommendation. (p. 6)

Our methodology focuses exclusively on the third step. Step 3 requires analysts to identify the impact categories of the proposed alternatives, record them as benefits or costs, and specify the measurement for each. From a CBA perspective, analysts are

interested only in impacts that affect the utility of those who have standing (Boardman, 2011). The following impact categories were explored in our TOS research:

- PCS Expense Incurred
- Dependent Children Social Development
- Spouse's Career
- Productivity and Proficiency
- Professional Relationships and Unit Cohesion
- Military Life / Family Morale
- Attrition, Turnover, Recruiting and Training
- Institutional Perceptions

PSC expenses are significant. The Marine Corps has approximately 183K active duty service members, with one-third moving each year to align with the current three year PCS rotation schedule. Furthermore, the Marine Corps requires its personnel to move more often than the other services (Stewart, 2001). Our research evaluates aggregate PCS expenses at the institutional level. We collected PCS expense data for FY2001 to FY2010 using the Department of the Navy's (DON) *Justification of Budget Estimate* books. This source shows the number of Marines who executed PCS orders per FY, broken out by the PCS types described in Table 1, Chapter I.

We perform cost analysis simulating an increase TOS requirement. However, unlike the research conducted by Morales discussed in Literature Review, we focus exclusively on Operational and Rotational PSC types. We believe Morales was thorough, but erroneously included all PCS types and overestimated the number of movers and underestimated savings as a result. As discussed in Chapter I, we omit the PCS categories that only impact total force structure and are not relevant to a TOS policy change. We hope to improve upon his findings and present a more accurate picture of how a TOS policy change affects PCS expenses.

For consistency, we use the same mathematical formulas, data source, and inflation index that Morales used in his study. For example, the raw expenses in Table 6

will be normalized by dividing by the FY2010 Military Personnel, Marine Corps Appropriation Raw Index as the base year. This study even uses Morales' 4 year rotation proposal to ensure a truly apples-to-apples comparison.

Table 6. Raw operational (O) and rotational (R) PCS expense and frequency.
Adapted from DON (2016).

Fiscal Year	O + R \$	# O + R Moves
FY2001	\$169,713,000	27,420
FY2002	\$164,829,000	26,792
FY2003	\$200,462,000	27,251
FY2004	\$206,240,000	26,704
FY2005	\$213,552,000	27,866
FY2006	\$246,724,000	32,459
FY2007	\$258,267,000	37,324
FY2008	\$307,267,000	25,677
FY2009	\$369,417,000	33,076
FY2010	\$344,410,000	31,824
Total	\$2,480,881,000	296,393

First, X bar, which is the average cost per PCS from FY2001 to FY2010, will be calculated using the raw data in Table 6.

$$X \bar{=} (\text{SUM annual PCS \$}) / (\text{SUM PCS orders executed})$$

Second, the number of times a Marine moves in a career is calculated. Under the current policy, a Marine executes 6.7 PCS moves during a 20 year career. This value was found by dividing a 20 year career by the current three year rotation cycle. For simplicity, Morales did not consider accession, training, or separations PCS types that involve much shorter TOS requirements. Therefore, the average cost to PCS a Marine every three years during a 20 year career is found by multiplying X bar by 6.7. Likewise, since a Marine will PCS four times under the new policy, one can estimate the average cost during the same 20 year career by multiplying X bar by four. Y bar is the career savings per Marine that would occur by changing the PCS rotation cycle from three to n years.

Therefore, $Y_{\bar{}} = (\text{average cost to PCS a Marine every 3 years during a 20 year career}) - (\text{average cost to PCS a Marine every } \# \text{ years during a 20 year career})$:

$$Y_{\bar{}} = (20/3)(X_{\bar{}}) - (20/n)(X_{\bar{}})$$

Finally, $Y_{\bar{}}$ can be expressed in annual terms ($Z_{\bar{}}$) by dividing by the 20 year career timespan, or:

$$Z_{\bar{}} = Y_{\bar{}} / 20$$

The remaining seven impact categories are important intangibles. In fact, these qualitative impact categories serve as the core to our research. We developed an anonymous and voluntary survey around those categories to elicit feedback. The NPS's Institutional Review Board approved our survey instrument and research design. The survey was conducted on-line through LimeSurvey. To solicit responses, an email with a link to the survey was sent to approximately 1,000 Marines between October and November 2016. Since the quality of research is a function of the number of responses, it was important to obtain as large a response rate as possible. The survey was designed to take approximately 10 minutes and at the convenience of the subject.

Targeting the correct audience was also an important consideration. Because every Marine would be impacted by a TOS policy change, we thought it essential to survey diverse units. Accordingly, the survey was distributed to Marines attending NPS and Marines assigned to 12th Marine Corps Recruiting District. These units were deliberately chosen because they likely represent the Marine Corps. For example, every rank, both genders, and nearly all MOS are represented at the recruiting district. Additionally, while NPS primarily has Captains and Majors, nearly every MOS is represented in this group as well.

Respondents were first asked for basic demographic information, rank, marital status, number of dependents, and years of service in the Marine Corps. The survey then proceeded in two areas 1) TOS Impact to Career and 2) TOS Impact to Quality of Life. TOS Impact to Career are qualitative questions designed to examine an active duty

Marine's perception about how the current TOS policy impacts career progression. TOS Impact to Quality of Life are qualitative questions to examine perceptions on how the current TOS policy impacts quality of life. We felt asking deliberate questions in each of these categories would produce the most comprehensive results from the group who has the most standing in a TOS policy change - Marines. See the Appendix for complete survey. Last, we use descriptive statistics and regression to analyze the data captured in the survey.

IV. ANALYSIS

A. PCS EXPENSES

As discussed in Chapter III, the average cost per PCS is represented by X bar. The raw expenses in Table 6 has been normalized and is represented in Table 7.

Table 7. Normalized operational (O) and rotational (R) PCS expense.
Adapted from Morales (2011) and DON (2016).

Fiscal Year	O+R \$	FY2010 1105 Raw Index	Normalized O + R (\$FY10)
FY2001	\$169,713,000	0.7128	\$238,093,434
FY2002	\$164,829,000	0.7548	\$218,374,404
FY2003	\$200,462,000	0.7931	\$252,757,534
FY2004	\$206,240,000	0.8263	\$249,594,578
FY2005	\$213,552,000	0.8554	\$249,651,625
FY2006	\$246,724,000	0.8827	\$279,510,593
FY2007	\$258,267,000	0.9042	\$285,630,392
FY2008	\$307,267,000	0.9326	\$329,473,515
FY2009	\$369,417,000	0.9671	\$381,984,283
FY2010	\$344,410,000	1	\$344,410,000
Total	\$2,480,881,000		\$2,829,480,357

X bar is then calculated by dividing the total normalized amount in Table 7 by the total number of PCS moves identified in Table 6.

$$X \text{ bar} = (\text{SUM Normalized PCS \$}) / (\text{SUM PCS orders executed})$$

$$X \text{ bar} = \$2,829,480,357 / 296,393 = \$9,546.38$$

Recall from Chapter III that a Marine PCSS 6.7 times during a 20 year career under the current three year PCS rotation cycle; therefore, the average cost to PCS a Marine every three years during a 20 year career is \$63,958, while the average cost during the same 20 year career is reduced to \$47,730 using Morales four year rotation proposal. In other words, the Marine Corps saves \$16,229 in career PCS costs per Marine

if it were to relax the PCS rotation cycle from three to four years using only Operational and Rotational PCS types. The following equation shows this calculation:

$$Y \bar{=} (6.7)(\$9,546) - (5)(\$9,546) = \$16,229$$

This amount is substantially more than the \$4,076 figure Morales calculated using all PCS types. Now consider the impact when expressing Y bar in annual terms (Z bar).

$$Z \bar{=} y \bar{/} 20$$

$$Z \bar{=} \$16,229 / 20 = \$811$$

Again, this amount is 58% more than the \$346 figure Morales calculated using all PCS types. While \$346 and \$811 may not seem significant in a multimillion-dollar budget, the financial impacts become so when multiplied by the average number of moves per year. For example, Morales found the average number of moves per year using all PCS types to be 106,712. When multiplied by \$346, Morales determined the Marine Corps would save \$37M in PCS expenses per year. Our study found the average number of moves per year using Operational and Rotational PCS types to only be 29,639 using the same raw data. Yet, when multiplied by \$811, we estimate the Marine Corps still saves \$24M in PCS expense per year. The following equations show these calculations.

$$\text{Total Annual Savings} = (Z \bar{)} * (\text{average \# moves during a 10 year period})$$

$$(\$346) * (106,712) = \$36,975,222$$

$$(\$811) * (29,639) = \$24,050,583$$

Finally, a five year TOS policy would increase Z bar to \$1,289 and save the Marine Corps \$38M annual. This multistep calculation is displayed as follows:

$$Y \bar{=} (6.7)(\$9,546) - (4)(\$9,546) = \$25,774$$

$$Z \bar{=} \$25,774 / 20 = \$1,289$$

$$\text{Total} = \$1,289 * 29,639 = \$38,204,671$$

While Morales' analysis yields 35% more savings than our approach, he does so by considering 72% more PCS moves, of which 100% are fixed toward force shaping. Therefore, by focusing only on core PCS types and omitting PCS categories that are not

influenced by a TOS policy change, we believe we improved upon Morale's findings and present a more relevant picture of how a TOS policy change impacts the PCS expenses.

B. SURVEY RESULTS

1. Descriptive Statistics

This report documents Marines' perceptions of TOS via a qualitative survey. Qualitative survey responses are an excellent way to access attitudes about policies such as TOS. A total of 262 Marines completed the survey, and Table 8 contains summary statistics of the respondents. Responses were mandatory for all questions; therefore, there is no incomplete data. We omitted responses from one E3 and one O6 because they were the only Marines who responded from their pay grade. Accordingly, all results are analyzed using 260 total responses.

Table 8. Sample population summary statistics.

	MEAN
NUMBER OF RESPONDENTS	260
E5	.09
E6 – E9	.25
O2 – O3	.39
O4 – O5	.26
TIME IN SERVICE	11.30
PCS MOVES	4.5
MALE	.88
MARRIED	.78
DEPENDENT CHILDREN	1.4
SPOUSE EMPLOYED	.37

The majority of respondents were married (88%) and male (78%). On average, respondents had 11.3 years TIS, had moved 4.5 times, and had 1.4 dependent children. 37% had employed spouses. Although the units we selected are diverse, the distribution of ranks who responded does not match the distribution of ranks in the Marine Corps population. For example, according the Marine Corps' Total Force Data Warehouse database, 40% of the Marine Corps is E1-E3, but our sample does not capture responses

from these ranks. Therefore, we cannot be sure that our results are externally valid for the entire Marine Corps. However, 100% of our responses are from more senior pay grades who, through personal experience, can better attest to the enduring challenges and opportunities of military lifestyle than can junior enlisted ranks.

2. Qualitative Questions

We asked a set of questions to examine an active duty Marine's perception about how the current TOS policy affects career. We asked Marines how satisfied they were with the current TOS policy. As shown in Figure 1, an overwhelming 80% reported being neutral to completely satisfied, while only 20% reported being unsatisfied.

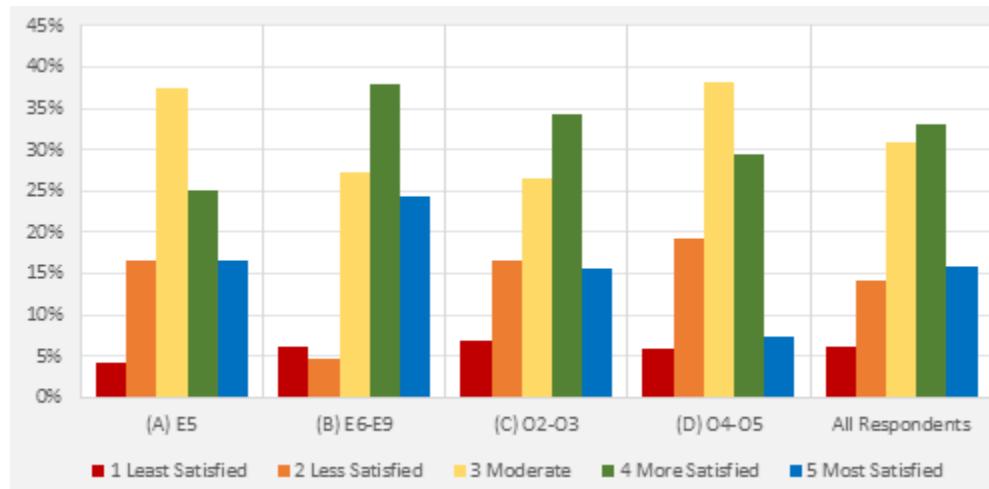


Figure 1. Survey question: How satisfied are you with the Marine Corps' current TOS policy to move Marines every three years?

We then asked Marines the degree to which they agree or disagree with the statements "The current TOS policy adequately provides career development" and "The current TOS policy adequately provides MOS proficiency and productivity." These results are summarized in Figures 2 and 3, respectively. Most Marines took a neutral or slightly favorable position to both statements. Only 14% disagree with the first statement, while only 21% of respondents disagree with the second statement. The results were similar when these two statements were rephrased as questions. The first question was "Do you think a longer TOS policy would improve career development?"; 38% answered

yes. The second question was “Do you think a longer TOS policy will improve individual productivity?”; 47% answered yes.

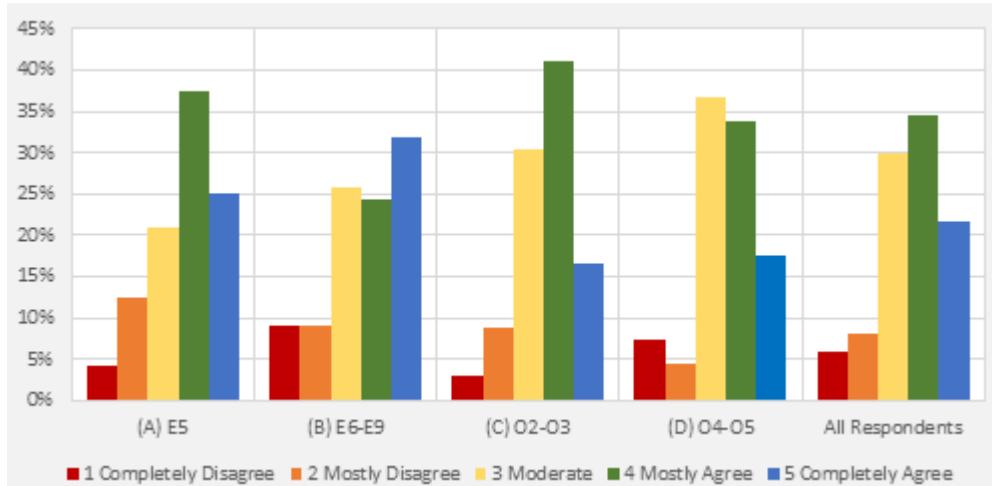


Figure 2. Survey statement: The current TOS policy adequately provides career development.

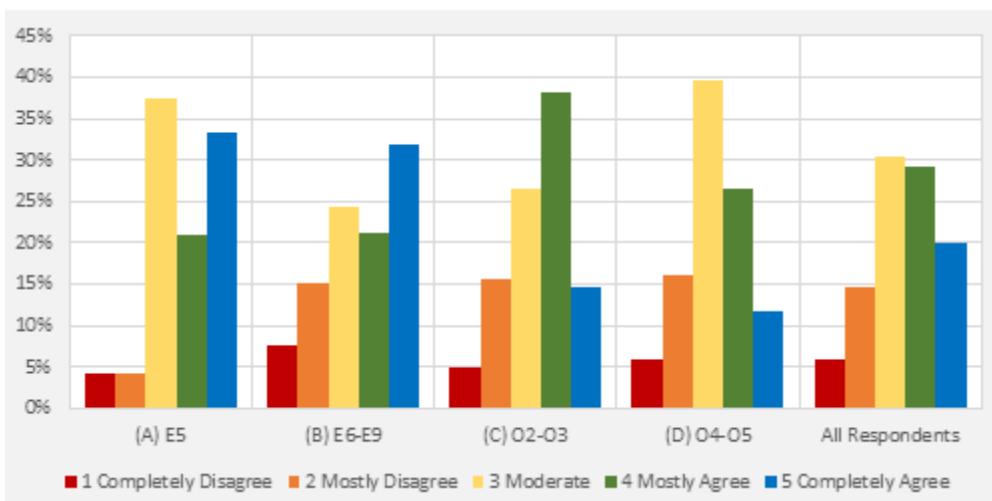


Figure 3. Survey statement: The current TOS policy adequately provides MOS proficiency and productivity.

Regardless of rank, respondents believe that the current TOS policy adequately enables career progression. Overall, Marines feel the current policy neither really

enhances nor detracts productivity. Importantly, few respondents believe that the current TOS policy has negative career implications.

We suspected that institutional perceptions influenced these results, however. Therefore, we asked Marines if they feel “homesteading” has a negative perception within the current Marine Corps’ culture. “Homesteading” is a term used for Marines that remain in a geographic area for multiple tours. 69% answered yes according to Table 9. Although the majority of Marines feel the current TOS adequately supports career development, we feel the survey results could have been a consequence to the current culture. The current culture is that if a Marine remains at a location for an extended period then the individual and institution suffer. Senior leadership believes “homesteading” stifles professional development, limits leadership opportunities, and demonstrates less dedication. Other arguments include Marines lose their expeditionary mindset or become complacent. Without this influence, we believe a larger percentage of Marines would have agreed more that longer TOS better enables their careers.

We also asked a series of questions to elicit perceptions on how the current TOS policy impacts quality of life. We asked Marines “Do you think increasing TOS will improve quality-of-life?” As shown in Table 9, the majority (67%) believed quality of life would increase as TOS increases. There was only a slight difference between marital status. 70% of Married said yes, while 58% of single said yes.

Table 9. Survey questions about career and quality of life impacts.

Impacts to Career	Percentage stating “Yes”
Do you think a longer TOS policy would improve career development?	38%
Do you think increasing TOS will improve individual productivity?	47%
Do you think increasing TOS will sacrifice unit readiness?	15%
Do you think increasing TOS will improve quality-of-life?	67%
If assigned to an <i>undesired</i> geographic location, will an increased TOS requirement negatively impact your retention?	78%
Would you be willing to remain at an undesired location if you received additional leave per month?	26%
Do you feel “homesteading” has a negative perception within the current Marine Corps’ culture?	69%

First, we asked Marines how the current policy impacts their spouse. On a scale of 1 to 5 we asked Marines how strongly they agree or disagree with the following statement (1 being completely disagree and 5 being completely agree): “The current TOS is a factor in your spouse’s decision to work.” Figure 4 shows that 36% completely agree and 22% mostly agree, while 31% disagree. These results trended consistently across the ranks.

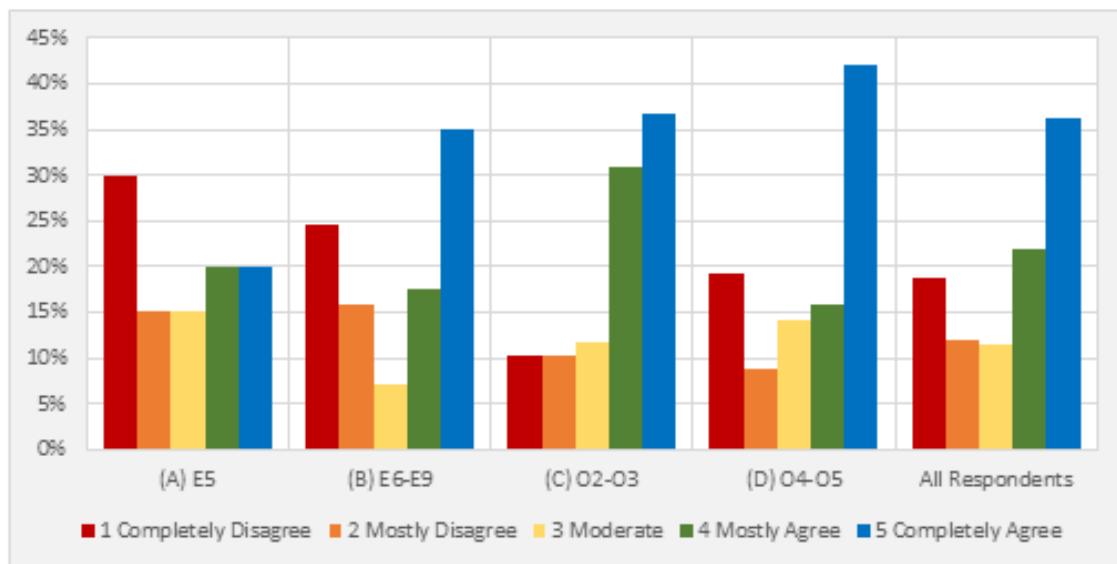


Figure 4. Survey statement: The current TOS is a factor in your spouse’s decision to work.

Using the same graduated scale, we asked Marines how strongly they agree or disagree with the following statement: “After a PCS move, it is difficult for your spouse to find acceptable employment and maintain his/her career.” As shown in Figure 5, 62% agree (and 39% completely agree), while only 21% disagree. The same figure shows that that the results are skewed right and increase steadily across all ranks.

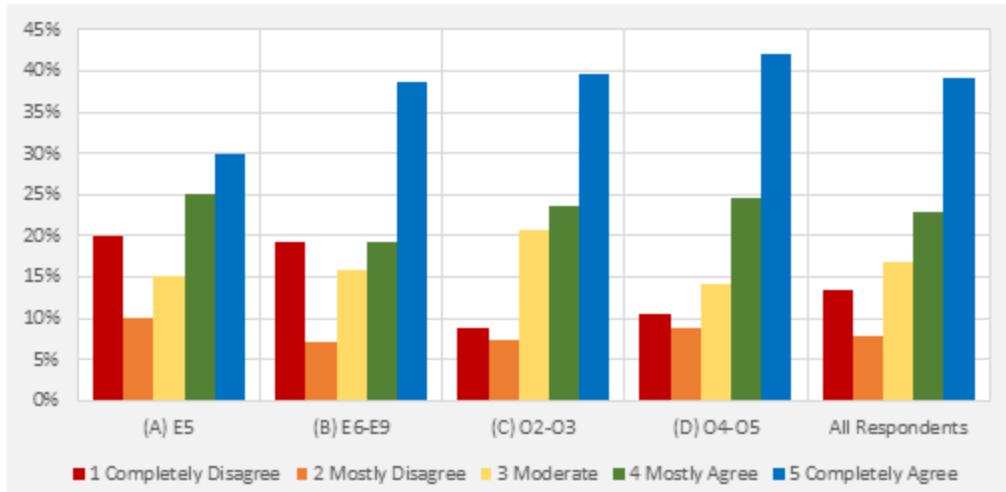


Figure 5. Survey statement: After a PCS move, it is difficult for your spouse to find acceptable employment and maintain his/her career.

Last, we asked “How does the current TOS policy affect your spouse’s ability to advance in his / her area of work?” All ranks trended equally toward adverse. Figure 6 shows that 59% reported the current policy has adverse implications; 38% reported no impact, and only 3% reported the current policy positively impacts their spouse’s ability to advance his or her area of work. Although the spouse employment questions were asked differently, the results consistently supported that the current TOS policy creates challenges for military spouses who work or would like to work.

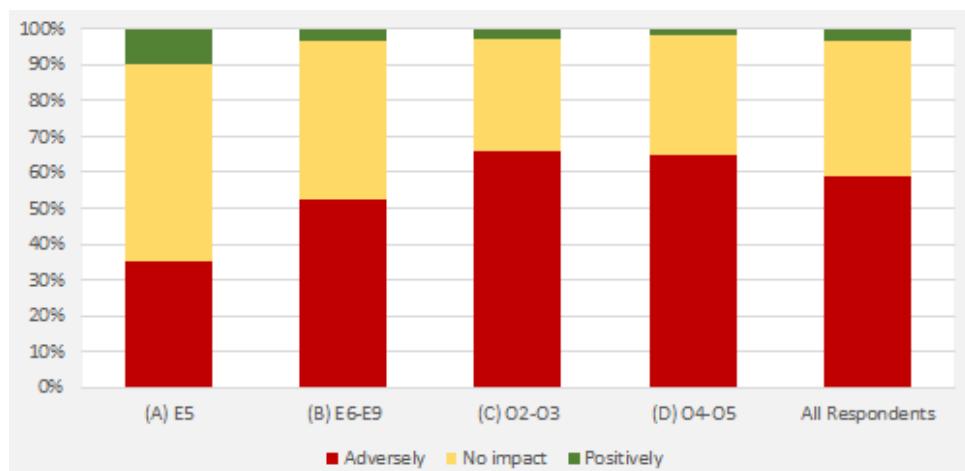


Figure 6. Survey question: How does the current TOS policy affect your spouse’s ability to advance in his / her area of work?

Similar results occurred when asked about how the current TOS policy impacts dependent children. Figure 7 shows 63% said the current policy adversely affects their child's ability to obtain and sustain relationships. 30% reported no impact and only 7% reported a positive impact. All ranks trended similarly as well.

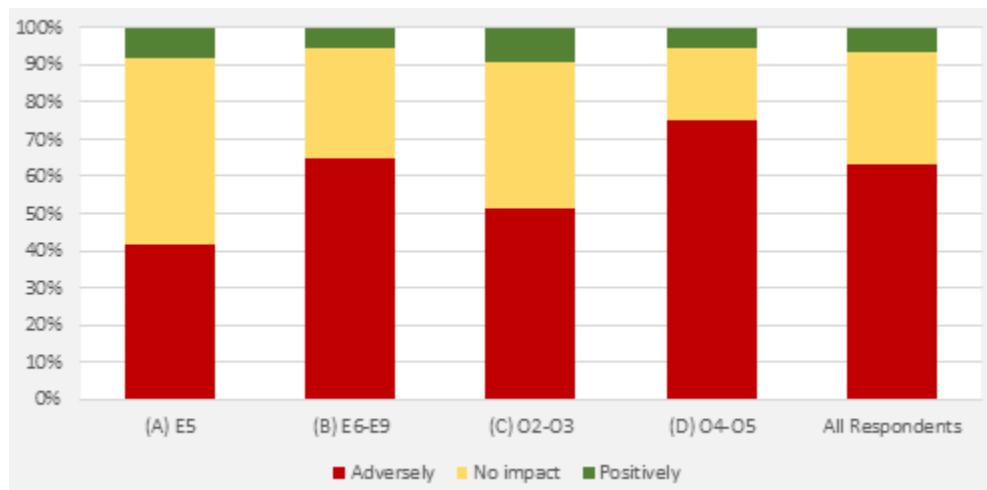


Figure 7. Survey question: How does the current TOS policy affect your child's / children's ability to obtain and sustain relationships?

Finally, we asked a series of questions to give us more information on how TOS impacts retention. We asked Marines "If you were stationed at an ideal location, would you prefer to never PCS, PCS every 3 years (current policy), or PCS every 5 years (proposed new policy)?" The results are displayed in Figure 8. All ranks preferred to PCS every five years. The majority (51%) prefer to PCS every five years; 25% prefer to never PCS, and 24% prefer to PCS every three years. It comes as no surprise that Marines would rather stay in an ideal location for an entire career than move every three years. What is interesting, however, is all ranks but E5 would rather move from an ideal location after five years than never move. This means that the Marines surveyed see the value in moving, so long as it is less frequent than every three years.

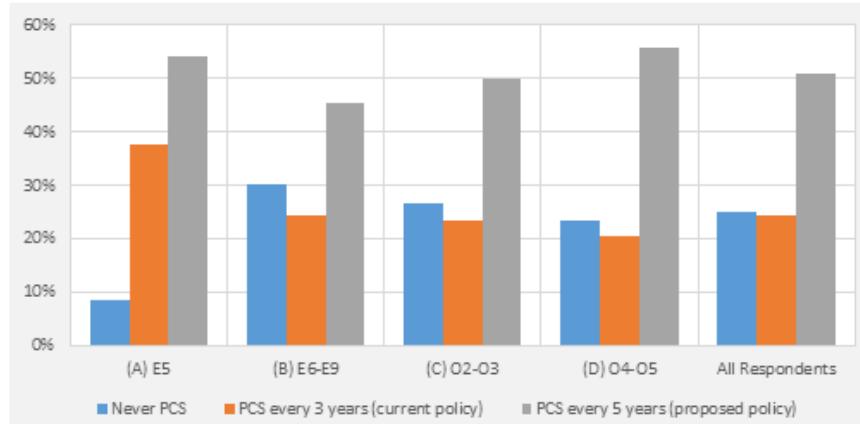


Figure 8. Survey question: If you were stationed at an ideal location, would you prefer to never PCS, PCS every 3 years (current policy), or PCS every 5 years (proposed new policy)?

Next, we looked at attitude toward an undesirable location. We asked Marines “If you were stationed at an undesirable location, would you prefer to never PCS, PCS every 3 years (current policy), or PCS every 5 years (proposed new policy)?” The results shown in Figure 9 are overwhelming. Under this scenario, 0% prefer to never PCS, 88% prefer to PCS every three years, and 12% prefer to PCS every five years. Further, when asked “If assigned to an undesired geographic location, will an increased TOS requirement negatively impact your retention?,” 78% answered yes. Therefore, we extended our research to find out how incentives, such as monetary compensation, changed responses and what amounts were most effective.

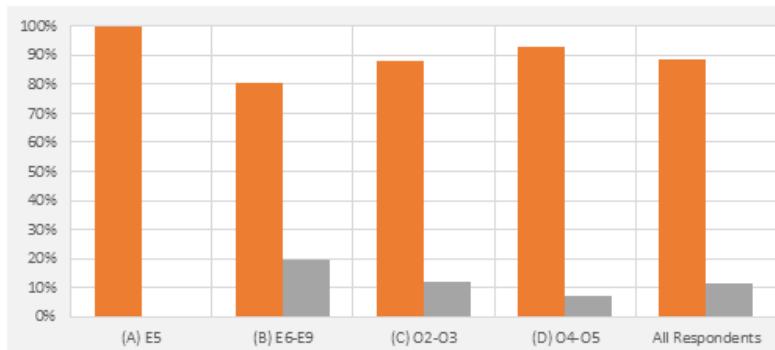


Figure 9. Survey question: If you were stationed at an undesirable location, would you prefer to never PCS, PCS every 3 years (current policy), or PCS every 5 years (proposed new policy)?

As summarized in Figure 10, all Marines were asked an initial baseline question “If you were at an undesirable location, would you accept a bonus of 15% of your base annual salary to stay in place for an additional year?”; 62% answered yes. Those who answered yes were then asked if they would accept a 10% bonus to stay in place for an additional year; 44% answered yes. Those who agreed to a 10% bonus were then asked if they would accept a 5% bonus; 35% answered yes.

The 38% who answered no to the initial baseline question were then asked if they would accept a bonus of 20% to stay in place; 74% still said no. We continued only with the 74% who denied a 20% bonus and asked them if they would stay in place at an undesirable location for an additional year if offered a 25% bonus instead; 57% still said no. It is clear that geographic preference is significant for this sub group. The majority of those who initially said no continued to say no even though offered more money.

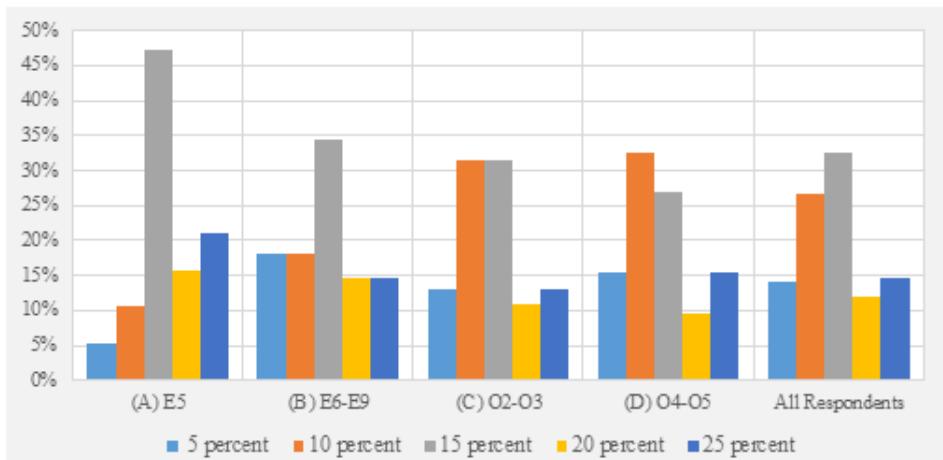


Figure 10. Minimum bonus to remain at an undesirable location for an additional year.

Last, we assessed the same impact using a non-monetary incentive. We asked “Would you be willing to remain at an undesired location if you received additional leave per month.” As shown in Table 9, 26% said yes meaning money is a much more attractive incentive tool when designing a retention plan around a TOS policy.

3. Regression

Regression is used to understand and qualify the relationship between variables and to make predictions. It is important to note that understanding the relationship is not the same as identifying causation. In other words, regression does not show how a change in one variable causes a change in another.

We ran a regression to help understand the relationship between the variables involved in whether or not a Marine believes increased TOS improves quality of life. The results are shown in Table 10. We regressed quality of life against the set of independent variables we felt to be most relevant.

Table 10. Quality of life regression.

<i>Variable</i>	<i>Coefficients</i>
E6-E9	0.391*** (0.102)
O2-O3	0.419*** (0.090)
O4-O5	0.419*** (0.120)
Number of PCS	0.009 (0.015)
Male	0.107 (0.085)
Married	0.172* (0.092)
Child (age 0–5)	0.009 (0.039)
Child (age 6–11)	0.023 (0.038)
Child (age 12–14)	-0.073 (0.100)
Child (age 15–18)	0.012 (0.093)
Child (age 19<)	0.016 (0.087)
Spouse is employed	0.001 (0.076)
Observations	260
R-squared	0.675
Mean of dep variable	0.673

Notes: ***p<0.01, **p<0.05, *p<.1 Omitted variables rank of E5, Time of Station in Years, Single, and Female. Standard errors in parentheses.

The outcome, or dependent variable, of the regression model is a binary variable for whether a respondent believes increasing TOS will improve quality of life. The vertical column contains regression coefficients, or independent variables, for the model. Each regression coefficient reflects the statistical relationship (correlation, not causation) between independent variables and the outcome, holding all other variables constant. In this regression, the Coefficient of Determination, or R-squared, is moderate, which indicates that the observable demographic variables explain the majority of the variation in beliefs. In other words, the regressions' set of independent variables explain 67% of the outcome's variation.

There are additional variables that are worth noting. For example, holding all other independent variables constant, married Marines are 17% more likely than single Marines to believe that increased TOS positively impacts quality of life. Additionally, those with middle school aged children are 7% less likely to believe that increased TOS positively impacts quality of life. All other age categories have a positive coefficient, indicating Marines with children not in middle school are more likely to believe that increased TOS enhances quality of life.

Using the same set of independent variables, we ran a second regression to help understand the relationship to with whether or not a Marine would remain at an undesirable location in exchange for monetary compensation. Specifically, the outcome is a percentage indicating the average minimum bonus a Marine surveyed would accept to remain in place at an undesirable location for an additional year. The results are shown in Table 11.

Table 11. Minimum bonus regression.

Variable	Coefficients
E6-E9	7.408*** (1.758)
O2-O3	7.307*** (1.532)
O4-O5	6.234*** (2.089)
Number of PCS	0.177 (0.247)
Male	5.005*** (1.465)
Married	1.443 (1.562)
Child (age 0–5)	0.123 (0.666)
Child (age 6–11)	0.010 (0.614)
Child (age 12–14)	1.796 (1.644)
Child (age 15–18)	-1.271 (1.603)
Child (age 19<)	-2.751* (1.466)
Spouse is employed	2.017 (1.313)
Observations	218
R-squared	0.780
Mean of dep variable	14.312

Notes: ***p<0.01, **p<0.05, *p<.1. Omitted variables rank of E5, Time of Station in Years, Single, and Female. Standard errors in parentheses.

There were 218 observations in this regression. Recall that of the 260 surveyed, 38% said no to the initial 15% bonus question. 74% then said no to a 20% bonus and 54% still declined when offered a 25% bonus, thus leaving 42 Marines who said no to all amounts offered in the survey. We did not build greater bonus into the survey because the amount becomes unaffordable and unrealistic for the institution; however, it is likely these 42 Marines would have agreed to an amount greater than 25%.

Several results are of note. First, the mean was 14.3%, which is the minimum bonus to remain in place at an undesirable location. For a Marine E6 with 10 years' time in service, this would equate to \$5,850 (\$3,409 monthly base pay x 12 months x 14.3%),

or about the difference in annual pay to the next higher pay grade. In terms of overall PCS savings, the bonus offsets a typical PCS travel claim that would have otherwise been paid to the member. However, the bonus is favorable to the government since it not only retains a Marine, but also avoids incurring the additional HHG portion of a PCS move (again, this would be an area to explore further in a CBA). Second, the R-squared is 78%, which indicates the regressions' set of independent variables explain most of the variation in the outcome.

Finally, it is interesting to note that, holding all other variables constant, the E6-E9 and O2-O5 observations required an average of 7% more bonus than did an E5s. Married Marines required 1.44% more bonus than single Marines, and Marines with older children did not require as large a bonus as did Marines with younger children. Finally, as shown in Figure 10, the majority of Marines surveyed (73%) said the minimum bonus they would be willing to accept to remain at an undesirable location for an additional year is 15% or less. This finding is consistent across all ranks surveyed.

Since these regression associations are not causal, we caution their use for policy-making purposes. Nonetheless, if Marine leadership is interested in how a specific demographic feels about the relationship between increased TOS and quality of life or retention incentives, then these regression results serve a credible point of departure to target further analysis.

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V. CONCLUSION

This report documents the findings of a comprehensive survey from Marines about their beliefs about TOS requirements. The purpose of the survey was to gather information from Marines about how they feel about the current TOS policy as well as how they would feel if the requirements increased from three to five years. The survey collected information from 260 Marines from two diverse commands. Our findings demonstrate opportunity to save money and potential to increase quality of life without adversely affecting readiness. For example, the Marine Corps stands to save \$38M annually by increasing its rotation cycle from three to five years. There were several interesting qualitative points derived from survey responses.

First, while 80% reported that the current TOS policy adequately supports career development, 69% feel homesteading has a negative perception with the current culture. Consequently, we feel the response rate would not have been as favorable if the current culture was supportive of longer TOS. Alternatively, 67% think longer TOS will improve quality of life. Specifically, 62% of Marines surveyed said the current TOS policy makes it difficult for their spouse to find acceptable employment and 63% said the current TOS policy adversely affects their child's ability to sustain relationships. Next, we found that if stationed at an ideal location then 51% prefer to PCS every five years if given the option to PCS every five years, every three years, or never PCS.

What is interesting is Marines surveyed would rather move from an ideal location after five years than never move. This means they see the value in moving, so long as it is less frequent than every three years. If stationed at an undesirable location, however, we found that 0% prefer to never PCS if stationed at an undesirable location and 88% prefer to PCS every three years. Furthermore, 78% said being assigned to an undesirable location would negatively influence their consideration to reenlist.

Finally, 62% said they would accept a 15% bonus to remain in place at an undesirable location, and of the 38% who declined the 15% bonus, 74% also declined a 20% bonus. The majority of those who initially said no continued to say no even when

offered more money. Non-monetary incentives were also explored, but they did not prove effective. For example, 74% said they would not remain at an undesirable location for additional leave. Therefore, money is a much more attractive incentive tool when designing a retention plan around a TOS policy change.

We take these results as evidence that Marines support longer TOS and a change in policy might be beneficial to the institution. Although we cannot formally state whether a policy change passes a CBA, the intangible benefits appear to be highly valued by the Marines surveyed. Moreover, there appears to be an opportunity for substantial savings. Our findings suggest the institution can save money and increase quality of life for its families without degrading individual or unit readiness. Marine leadership should consider increasing TOS requirements as a result.

APPENDIX: SURVEY

NPS Enterprise Survey - Time on Station Requirements: Costs, Policy Change and Perce... Page 1 of 15

Time on Station Requirements: Costs, Policy Change and Perceptions

The following survey is designed to capture how Marines feel about the current TOS policy.

Per MCO P1300.8S, "*Time on Station (TOS) requirements are established to stabilize the movement of Marines and their families. The minimum TOS for all assignments within or from CONUS is 36 months. Although there is no maximum tour length prescribed for CONUS tours, the policy has been for Marines to move every 3 years.*"

There are 37 questions in this survey

Consent

<https://survey.nps.edu/admin/printablesurvey/sa/index/surveyid/467249>

11/17/2016

[]

Naval Postgraduate School

Consent to Participate in Research

Introduction. You are invited to participate in a research study entitled “Time on Station Requirements: Costs, Policy Change and Perceptions”. The purpose of the research is to assess cost of the current policy as well as attitudes and perceptions if the Marine Corps were to change (Time of Service) TOS requirements from 3 to 5 years. Information collected will support a Naval Postgraduate School student thesis research.

Procedures. A voluntary online survey regarding your perception towards the current TOS policy (i.e. 3 years) and your attitude towards a policy change that would extend TOS requirements to 5 years. This survey is expected to take you approximately 10 minutes.

Location. This survey will take place online.

Voluntary Nature of the Study. Your participation in this study is strictly voluntary. If you choose to participate you can change your mind at any time and withdraw from the study. You will not be penalized in any way or lose any benefits to which you would otherwise be entitled if you choose not to participate in this study or to withdraw. The alternative to participating in this study is to not participate.

Potential Risks and Discomforts. There is a minimal risk of breach of confidentiality in participating in this survey. This survey is non attributional and completely anonymous.

Anticipated Benefits. Your response is important and appreciated; this study has the potential to directly influence a change in policy to TOS requirements. You will not directly benefit from participating and will not be compensated.

Confidentiality & Privacy Act. Any information that is obtained during this study will be kept confidential to the full extent permitted by law. All efforts, within reason, will be made to keep your personal information in your research record confidential but total confidentiality cannot be guaranteed. Responses will be maintained on the Naval Postgraduate School secure sever in a centralized database. Only members of the research team will access the data. Names are not being collected in the survey and there is no risk in tracing responses. Again, the survey is anonymous.

Points of Contact. If you have any questions or comments about the research, or you experience an injury or have questions about any discomforts that you experience while taking part in this study please contact the Principal Investigator, Professor Jesse Cuhna, jcuhna@nps.edu. Questions about your rights as a research subject or any other concerns may be addressed to the Navy Postgraduate School IRB Chair, Dr. Larry Shattuck, 831-656-2473, lgshattu@nps.edu.

Statement of Consent. I have read the information provided above. I have been given the opportunity to ask questions and all the questions have been answered to my satisfaction. I have been provided a copy of this form for my records and I agree to participate in this study. I understand that by agreeing to participate in this research and signing this form, I do not waive any of my legal rights.

*

Please choose **only one** of the following:

- Yes
- No

Sample Population

Preliminary questions that will allow us to understand and filter our sample population.

[]What is your rank? *

Please choose **only one** of the following:

- E1
- E2
- E3
- E4
- E5
- E6
- E7
- E8
- E9
- O1
- O2
- O3
- O4
- O5
- O6
- O7
- O8
- O9

[]How many years Time in Service (TIS) do you have? *

Only numbers may be entered in this field.

Please write your answer here:

[] How many times have you executed a Permanent Change of Station (PCS) move since joining the military? *

Only numbers may be entered in this field.

Please write your answer here:

[] How many times have you executed PCS move prior to satisfying the 36 month TOS requirement? *

Only numbers may be entered in this field.

Please write your answer here:

[] What type of unit are you currently stationed with? *

Please choose **only one** of the following:

- Operating Forces
- Supporting Establishment

[] What is your current geographical duty station? *

Please choose **only one** of the following:

- East Coast
- West Coast
- Hawaii
- OCONUS

[] What is your current Time on Station (TOS)? *

Please choose **only one** of the following:

- Less than 1 year
- Currently in my second year
- Currently in my third year

[] How long do you expect your TOS to be at this post? *

Please choose **only one** of the following:

- Less than 3 years
- 3 years
- More than 3 years

[] What is your gender? *

Please choose **only one** of the following:

- Female
- Male

[] What is your marital status? *

Please choose **only one** of the following:

- Single
- Married

[] Other than your spouse, how many dependents do you have? *

Please choose **only one** of the following:

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- More than 6

[]What are their ages? *

Only answer this question if the following conditions are met:

Answer was greater than '0' at question '12 [A9]' (Other than your spouse, how many dependents do you have?)

Only numbers may be entered in these fields.

Number of children in each age range? ("0" required if zero)

Ages 0 - 5

Ages 6 - 11 (Elementary School)

Ages 12 - 14 (Middle School)

Ages 15 - 18 (High School)

Ages 19+ (College)

[]Are your dependents co-located with you? *

Please choose **only one** of the following:

- Yes
- No
- N/A, I do not have dependents

[]Was the decision to not be co-located with your dependents voluntary? *

Only answer this question if the following conditions are met:

Answer was 'No' at question '14 [A10]' (Are your dependents co-located with you?)

Please choose **only one** of the following:

- Yes
- No

[]Is your spouse active duty military? *

Only answer this question if the following conditions are met:

Answer was 'Married' at question '11 [A8]' (What is your marital status?)

Please choose **only one** of the following:

- Yes
- No

[:]Is your spouse employed? *

Only answer this question if the following conditions are met:
Answer was 'Married' at question '11 [A8]' (What is your marital status?)

Please choose **only one** of the following:

- Yes
- No

[:]What is his/her salary? *

Only answer this question if the following conditions are met:
Answer was 'Yes' at question '17 [A12]' (Is your spouse employed?)

Please choose **only one** of the following:

- Less than \$50,000
- \$50,000-\$75,000
- \$75,000-\$100,000
- \$100,000-\$150,000
- More than \$150,000

TOS Impact to Career

Qualitative questions to examine an active duty Marine's perception about how the current Time on Station policy impacts their career.

[]

On a scale of 1 – 5, how satisfied are you with the Marine Corps' current TOS policy to move Marines every three years? (1 being the least satisfied and 5 being the most satisfied)

*

Please choose **only one** of the following:

- 1
- 2
- 3
- 4
- 5

[]**On a scale of 1 – 5, how much do you agree with the following statements (1 being completely disagree and 5 being completely agree)? ***

Please choose the appropriate response for each item:

1 2 3 4 5

The current TOS policy adequately provides career development.

The current TOS policy adequately provides MOS proficiency and productivity.

TOS Impact to Quality of Life

Qualitative questions to examine perceptions on how the current Time on Station policy impacts quality of life.

[]

On a scale of 1 – 5, how much do you agree with the following (1 being completely disagree and 5 being completely agree)?

*

Only answer this question if the following conditions are met:

Answer was 'Married' at question '11 [A8]' (What is your marital status?)

Please choose the appropriate response for each item:

1 2 3 4 5

The current TOS is a factor in your spouse's decision to work.

After a PCS move, it is difficult for your spouse to find acceptable employment and maintain his/her career.

[]How does the current TOS policy affect your spouse's ability to advance in his / her area of work? *

Only answer this question if the following conditions are met:

Answer was 'Married' at question '11 [A8]' (What is your marital status?)

Please choose **only one** of the following:

- Adversely
- No impact
- Positively

[]How does the current TOS policy affect your child's / children's ability to obtain and sustain relationships? *

Only answer this question if the following conditions are met:

Answer was greater than or equal to '1' at question '12 [A9]' (Other than your spouse, how many dependents do you have?)

Please choose **only one** of the following:

- Adversely
- No impact
- Positively

[]

Do you think increasing TOS will improve quality-of-life? *

Please choose **only one** of the following:

- Yes
- No

[]

Do you think increasing TOS will sacrifice unit readiness? *

Please choose **only one** of the following:

- Yes
- No

[]

Do you think increasing TOS will improve individual productivity? *

Please choose **only one** of the following:

- Yes
- No

[]

Do you think a longer TOS policy would improve career development? *

Please choose **only one** of the following:

- Yes
- No

[] If assigned to an undesired geographic location, will an increased TOS requirement negatively impact your retention? *

Please choose **only one** of the following:

- Yes
- No

[]

If you were at an undesirable location, would you accept a bonus of 15% of your base annual pay to stay there for an additional year?

*

Please choose **only one** of the following:

- Yes
- No

[]

If you were at an undesirable location, would you accept a bonus of 10% of your base annual salary to stay in place for an additional year? *

Only answer this question if the following conditions are met:

Answer was 'Yes' at question '29 [C9]' (If you were at an undesirable location, would you accept a bonus of 15% of your base annual pay to stay there for an additional year?)

Please choose **only one** of the following:

- Yes
- No

[] If you were at an undesirable location, would you accept a bonus of 5% of your base annual salary to stay in place for an additional year? *

Only answer this question if the following conditions are met:

Answer was 'Yes' at question '30 [C9A]' (If you were at an undesirable location, would you accept a bonus of 10% of your base annual salary to stay in place for an additional year?)

Please choose **only one** of the following:

- Yes
- No

[] If you were at an undesirable location, would you accept a bonus of 20% of your base annual salary to stay in place for an additional year? *

Only answer this question if the following conditions are met:

Answer was 'No' at question '29 [C9]' (If you were at an undesirable location, would you accept a bonus of 15% of your base annual pay to stay there for an additional year?)

Please choose **only one** of the following:

- Yes
- No

[] If you were at an undesirable location, would you accept a bonus of 25% of your base annual salary to stay in place for an additional year? *

Only answer this question if the following conditions are met:

Answer was 'No' at question '32 [C9AN]' (If you were at an undesirable location, would you accept a bonus of 20% of your base annual salary to stay in place for an additional year?)

Please choose **only one** of the following:

- Yes
- No

[] Would you be willing to remain at an undesired location if you received additional leave per month? *

Please choose **only one** of the following:

- Yes
- No

[] "Homesteading" is a term used for Marines that remain in a geographic area for multiple tours. Do you feel "homesteading" has a negative perception within the current Marine Corps' culture? *

Please choose only one of the following:

- Yes
- No

[]

If you were stationed at an ideal location, would you prefer to never PCS, PCS every 3 years (current policy), or PCS every 5 years (proposed new policy)? *

Please choose only one of the following:

- Never PCS
- PCS every 3 years (current policy)
- PCS every 5 years (proposed policy)

[]

If you were stationed at an undesirable location, would you prefer to never PCS, PCS every 3 years (current policy), or PCS every 5 years (proposed new policy)? *

Please choose only one of the following:

- Never PCS
- PCS every 3 years (current policy)
- PCS every 5 years (proposed policy)

Submit your survey.
Thank you for completing this survey.

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